UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 1
5 Post Office Square
Boston, MA 02109-3912

March 21, 2017

Paul Farrell
Connecticut Department of Energy & Environmental Protection
79 Elm Street
Hartford, CT 06106-5127

Dear Mr. Farrell:

Thank you for the opportunity to review and comment on your draft exceptional event demonstration, shared with us on March 3, 2017, for the Ft. McMurray wildfire. The Connecticut Department of Energy & Environmental Protection (CT DEEP) is proposing the demonstration under the exceptional events rule at 40 CFR 50.14 to show that the elevated ozone concentrations recorded at the Cornwall, East Hartford, Westport, and Abington monitoring locations on May 25 and 26, 2016 were the result of high levels of ozone and ozone precursors being transported within the smoke plume to Connecticut.

EPA Region 1 has reviewed CT DEEP's draft demonstration and is providing comments to strengthen the discussion. You will find the Agency's comments in the enclosure. In addition to the comments in the enclosure, we are also providing an electronic markup of the draft demonstration with recommendations for minor clarifying and editorial revisions.

If you have any questions regarding this matter, please contact Eric Wortman at 617-918-1624, or Catie Taylor at 617-918-8607.

Sincerely,

David B. Conroy, Chief
Air Programs Branch

Enclosures

cc: Michael Geigert, CT DEEP
Randall Semagin, CT DEEP
Kiernan Wholean, CT DEEP

Enclosure

EPA Comments on Connecticut's Draft Exceptional Events Demonstration for the Ft. McMurray Wildfire Event in May 2016

The Connecticut Department of Energy & Environmental Protection (CT DEEP) provided EPA a draft exceptional events demonstration on March 3, 2017 for air quality impacts from the 2016 Ft. McMurray wildfire. The draft submittal requests the exclusion of 8-hr ozone (O_3) monitoring data on May 25 and 26, 2016 for the Cornwall, East Hartford, Westport, and Abington monitoring locations. The comments below are based on EPA's review of the draft submittal.

1. If smoke from fires (Mexico/Yucatan) other than the Fort McMurray fire (narrative on Pages 4 and 22) are considered important in the narrative, then additional discussion related to fire-related smoke from these fires, their transport, and their potential effects needs to be built into the narrative. As written, the contribution and significance of these additional fires is not described in this exceptional event request. It should either be better clarified that the demonstration focuses solely on the Fort McMurray wildfire plume or the reference to other fires should be dropped from the demonstration narrative entirely.

2. We recommend that CT DEEP provide additional information to support its request with respect to the Westport monitoring location. This site has both local sources of ozone precursors, as well as transport from the New York City metropolitan area. CT DEEP should provide information that shows that, even if local sources and/or transported ozone from upwind urban areas affected ozone concentrations at the Westport monitoring location on May 25 and 26, smoke during these days was present at the site and contributed to the elevated levels of ozone. Specifically, we believe the following analyses would provide useful information.

    a. CT DEEP should provide a robust set of HYSPLIT back trajectories from the Westport monitoring location and discuss the transport of smoke and/or ozone from smoke from Ft. McMurray to the Westport site.

    b. CT DEEP should provide plots similar to Figure 10 in the March 10th draft for sites near and upwind of the Westport monitor. The plots should include, where available, O_3, black carbon (BC), delta-C, carbon monoxide (CO), and fine particulate matter ($PM_{2.5}$). Depending on the monitoring site, some or all of this information is available for Danbury, New Haven, and upwind locations in New York and New Jersey. Information for delta-C for sites in the New Jersey and New York metropolitan area has already been shared with CT DEEP staff.

    c. CT DEEP should provide an in depth analysis of the hourly ozone and surface meteorological measurements for the Westport site, including hourly wind speed and wind direction for at least the May 23-28 time period. It is critical that CT DEEP

conclusively show that the high ozone readings at the Westport from May 25 and 26 were influenced by smoke from the wildfire and were not largely caused by urban transport.

d. Similar to Figures 18 and 19, CT DEEP should provide webcam pictures from any cameras near Southwest CT to help show that smoke was present in coastal areas of CT during May 25 and 26. One such camera is the Newark/NYC Hazecam available at www.hazecam.net/. An archive of pictures taken during May 2016 should be available.

3. On Table 3 in Section 2.3, the column for "revised 2016" design values should only show data for the Cornwall, East Hartford, Westport, and Abington sites since these are the only sites for which CT DEEP is requesting exclusion of monitoring data. CT DEEP should also consider adding two columns to Table 3 to indicate the critical 4th high value for 2017 to help demonstrate the regulatory significance of the exceptional event for the Cornwall, East Hartford, and Abington monitoring sites.

   For example, the table provided below shows that with the May 25 and 26 data excluded, the 4th high 8-hour ozone average at Abington must stay below 76 parts per billion (ppb) in 2017 to stay in attainment of the 70 ppb National Ambient Air Quality Standard (NAAQS), as compared to 69 ppb if the data is not excluded. This difference in the critical value is significant and helps demonstrate the regulatory significance of this exceptional event demonstration for this site. For the Cornwall and East Hartford sites, the regulatory significance is related to staying below the 75 ppb NAAQS. For the Westport site, the regulatory significance is with regard to meeting and maintaining the 1997 O_3 NAAQS for the New York-N. New Jersey-Long Island, NY-NJ-CT O_3 nonattainment area, and CT DEEP should discuss the still applicable SIP call for attainment plans for this area under the 1997 Ozone NAAQS (see 81 FR 26697).

	Current Values					Without May 25 - 26, 2016		
Site Name	4th High 2014	4th High 2015	4th High 2016	2014-2016 DV	2017 Critical Value (NAAQS Standard)	4th High 2016	2014-2016 DV	2017 Critical Value (NAAQS Standard)
Abington	67	70	74	70	69 (70)	67	68	76 (70)
Cornwall	68	76	78	74	74 (75)	74	72	78 (75)
East Hartford	77	75	75	75	78 (75)	72	74	81 (75)
Westport	81	87	87	85	81 (84)	81	83	87 (84)

4. Many of the figures in the demonstration are complex and hard to read. CT DEEP should consider revising some of the figures in the demonstration and provide more detail about the figures in the narrative discussion. Each figure should be described in enough detail to provide the public with an understanding of the data being illustrated. The figures should only contain information necessary to convey the message and be large enough to distinguish the data being presented.

5. The information presented in Figure 10 for Cornwall should also include $PM_{2.5}$. Additionally, we recommend that similar plots be presented to show likely impacts from smoke at the East Hartford and Abington for at least the May 23-28 timeframe. The East Hartford plot should include BC, delta-C, CO, and $PM_{2.5}$ from the East Hartford site. This will provide additional information to support the claim that smoke influenced this monitor. For Abington, CT DEEP should look at data from sites in Rhode Island, which could help illustrate that smoke and precursors reached areas in Northwest Connecticut. CT DEEP could also provide plots of BC, delta-C, CO, $PM_{2.5}$, and O_3 for non-event days identified in Section 3.3 to assist with comparisons of smoke-induced ozone and non-smoke-induced ozone.

6. CT DEEP should include CO plume data for May 25 and 26 in Figure 20 to illustrate the presence of tropospheric CO during the period of the proposed exceptional event. This would help demonstrate smoke was over CT during the proposed event period.

7. CT DEEP should consider using time-lapse animation links to help illustrate the time sequence of smoke moving across the central /northeastern U.S. in Section 3. Note that any use of animated technology should be able to be easily viewed by the public as part of the public comment period and be used to supplement the figures provided in the demonstration. At a minimum, CT DEEP should include satellite images for May 25 and 26 in Figure 21 to illustrate the location of the smoke plume during the period of the proposed exceptional event.

8. CT DEEP should provide wind rose vs ozone concentrations plots for each of the monitoring locations for multiple years with explanation(s) regarding what the data mean. This will illustrate the prominent surface wind direction during times of elevated ozone.

9. CT DEEP should provide figures similar to Figures 32-38 for Chemical Speciation Network (CSN) sites in CT (New Haven) and New York City. The CSN monitors in CT were sampled on May 24 and May 27 and may show evidence of smoke in the area.

10. The trajectory in Figure 42 indicates stagnation at the surface. While we agree that the 850 millibar (mb) trajectory is comparable to those in Figures 43-47, the surface trajectory is not. We suggest that the 20 UTC trajectories may show a better depiction of air flow during the period of peak ozone development for May 25 and 26.

11. Section 3.6 on page 53 says "from the previous similar day analysis, August 29th 2016 was determined to have a similar weather pattern as May 25th" but no analysis was provided for this day in Section 3.3. CT DEEP should provide the analysis for August 29, 2016 similar to Figures 45-47.

12. CT DEEP should provide a figure for the Abington site similar to Figures 59-61 for Cornwall, East Hartford, and Westport. This will contribute to the weight of evidence for the

Abington site in addition to the other three monitoring locations for which data are being requested for exclusion.